measurements similar to those of M. Rollet for both English and Germans. The value of such statistics for comparative purposes would be very great.

"On the Nature of the Contagium of Rinderpest. Preliminary Communication."

By ALEXANDER EDINGTON, M.B., F.R.S.E., Director Colonial Bacteriological Institute, Cape Colony. Communicated by Sir JAMES CRICHTON BROWNE, M.D., LL.D., F.R.S. Received March 22,—Read June 3, 1897.

In the following pages it is proposed to communicate to the Royal Society the results of experiments made in South Africa on the infectivity of the blood of animals affected with Rinderpest. The experiments were all made on cattle kept under conditions in which accidental spontaneous infection could with certainty be excluded. These experiments had been concluded in 1896, before the arrival of Dr. R. Koch in South Africa, and their results had been communicated to him on his arrival.

1. The blood of an animal ill with rinderpest, when taken during the febrile stage or previous to death, and injected subcutaneously or intravenously into healthy cattle, produces the typical disease—rinderpest, provided the blood is prevented from coagulating.

2. The onset of coagulation and actual coagulation of the blood exert a marked destructive influence on the virulence of such blood.

3. The best method of obtaining virulent blood is to draw it aseptically from the jugular vein of an animal ill with rinderpest, and to mix it immediately with a 1 per cent. solution of citrate of potash, the latter previously well sterilised, in the proportion of 2—3 parts of blood to 1 part of citrate of potash solution. Such blood, as has been shown, remains fluid.

4. This citrate of potash mixture of blood proves virulent in the first few days, generally not exceeding six days; after six days' keeping the virulence becomes rapidly weakened, so that after nine days the blood mixture is altogether inert.

5. Admixture of glycerine to citrate blood does not *cæteris paribus* interfere with the virulence of such blood. Glycerine added to fresh blood does interfere with the virulence of the latter on account of the coagulation of the blood.

6. The nasal mucus of an infected animal when used fresh and rubbed into the nostrils of normal cattle, produced in all instances typical rinderpest. We have never had a single failure in attempting to produce the disease by this means. By keeping the nasal mucus, even for a few hours, its virulence becomes markedly less.

7. The condition of marked swelling of the lymphatic glands is one of, if not indeed the most evident pathognomic feature of the disease. The contagium exists as a primary infection in the lymphatic glands.

8. A very mild attack of rinderpest, such as is produced by injection of blood of greatly decreased virulence, does not convey absolute immunity, this latter being produced in proportion to the severity of the attack through which the animal had passed primarily. An animal seemingly affected may have a relapse of the disease, which may go on to fatal issue or be mild in type, leading to recovery. Animals in the latter case always acquire immunity of a high degree.

"On the Dielectric Constants of certain Organic Bodies at and below the Temperature of Liquid Air." By JAMES DEWAR, M.A., LL.D., F.R.S., Fullerian Professor of Chemistry in the Royal Institution, and J. A. FLEMING, M.A., D.Sc., F.R.S., Professor of Electrical Engineering in University College, London. Received June 29, 1897.

Continuing the researches on which we are engaged on the Dielectric quality of matter at very low temperatures, we have examined a number of organic bodies and measured their dielectric constants at and above the temperature of liquid air.

The apparatus and arrangements for effecting this measurement are described in a former communication by us on the same subject.*

The frequency of the reversals of the electromotive force used in charging the condenser in the experiments here described was, as before, 120. The condenser used was the gilt cone condenser described in the communication mentioned.

In another paper† we have given the results obtained by us on the measurement of the dielectric constants of glycerine, ethylene dibromide, and nitrobenzol at very low temperatures, and shown that in the case of glycerine the very high value of the dielectric constant possessed by this body, above $-100°$ C., is reduced, on cooling to $-185°$ C., to a value not far from 3·0. We have also shown that a similar great reduction in the value of the dielectric constant takes place in the case of ethyl alcohol when frozen at $-185°$ C.‡

* See Fleming and Dewar, "On the Dielectric Constants of Certain Frozen Electrolytes at and above the Temperature of Liquid Air," 'Roy. Soc. Proc.,' vol. 61, p. 299.

† See Fleming and Dewar, "On the Dielectric Constants of Ice, Glycerine, Ethylene Dibromide, and Nitrobenzol at and above the Temperature of Liquid Air," 'Roy. Soc. Proc.,' vol. 61, p. 316.

‡ See Dewar and Fleming, "Note on the Dielectric Constants of Ice and Alcohol at very Low Temperatures," 'Roy. Soc. Proc.,' vol. 61, p. 2.